

DOCKET NO.: ISIS-5246

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Phillip Dan Cook, et al.

Application No.: 10/663,155

Filing Date: September 15, 2003

For: OLIGONUCLEOTIDES CONTAINING 2'-O-MODIFIED PURINES

Confirmation No.: Not Yet Assigned

Group Art Unit: Not Yet Assigned

Examiner: Not Yet Assigned

DATE OF DEPOSIT: *October 15, 2003*

I HEREBY CERTIFY THAT THIS PAPER IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL, POSTAGE PREPAID, ON THE DATE INDICATED ABOVE AND IS ADDRESSED TO THE UNITED STATES PATENT AND TRADEMARK OFFICE, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450.

TYPED NAME: Elizabeth A. McLoud

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 CFR § 1.56 and in accordance with 37 CFR §§ 1.97-1.98, information relating to the above-identified application is hereby disclosed. Inclusion of information in this statement is not to be construed as an admission that this information is material as that term is defined in 37 CFR § 1.56(b).

- ☒ In accordance with § 1.97(b), since this Information Disclosure Statement is being filed either within three months of the filing date of the above-identified application, within three months of the date of entry into the national stage of the above identified application as set forth in § 1.491, before the mailing date

of a first Office Action on the merits of the above-identified application, or before the mailing date of a first Office Action after the filing of request for continued examination under § 1.114, no additional fee is required.

☐ In accordance with § 1.129(a), this Information Disclosure Statement is being filed in connection with ☐ the first or ☐ second After Final Submission, therefore:

☐ Certification in Accordance with § 1.97(e) is attached; or

☐ The fee of \$180.00 as set forth in § 1.17(p) is attached.

☐ In accordance with § 1.97(c), this Information Disclosure Statement is being filed after the period set forth in § 1.97(b) above but before the mailing date of either a Final Action under § 1.113 or a Notice of Allowance under § 1.311, or before an action that otherwise closes prosecution in the application, therefore:

☐ Certification in Accordance with § 1.97(e) is attached;  
or

☐ The fee of \$180.00 as set forth in § 1.17(p) is attached.

☐ In accordance with § 1.97(d), this Information Disclosure Statement is being filed after the mailing date of either a Final Action under § 1.113 or a Notice of Allowance under § 1.311 but before, or simultaneously with, the payment of the Issue Fee, therefore included are: Certification in Accordance with § 1.97(e); and the submission fee of \$180.00 as set forth in § 1.17(p).

☐ Copies of each of the references listed on the attached Form PTO-1449 are enclosed herewith.

- ☒ Copies of references listed on the attached Form PTO-1449 are enclosed herewith
- ☒ Copies of references listed on the attached Form PTO 1449 are not required to be submitted pursuant to the June 30, 2003 recent revisions to 37 CFR § 1.98(a)(2)(i).

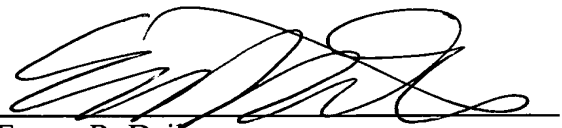
## EXCEPT THAT:

- ☐ In view of the voluminous nature of references [list as appropriate], and the likelihood that these references are available to the Examiner, copies are not enclosed herewith.
- ☒ In accordance with § 1.98(d), copies of the following references listed on the attached Form PTO-1449 are not enclosed herewith because they were previously cited by or submitted to the U.S. Patent and Trademark Office in patent application(s) for which a claim for priority under 35 U.S.C. § 120 have been made in the instant application:
  - ☒ Copies of references **1-15 and 32** listed on the attached Form PTO-1449 were previously cited by or submitted to the Patent and Trademark Office in prior Application No. **07/918,362 now U.S. Patent No. 5,506,351**, filed **July 23, 1992**; copies of references **16-31 and 33-48** listed on the attached Form PTO-1449 were previously cited by or submitted to the Patent and Trademark Office in prior Application No. **07/967,267**, filed **October 27, 1992**.

Please charge any deficiency or credit any overpayment to Deposit Account No. 23-3050. This form is submitted in duplicate.

- ☐ The relevance of those listed references which are not in the English language is as follows:
- ☒ An English language abstract was previously provided for reference **44** which is not in the English language.

Date: October 15, 2003



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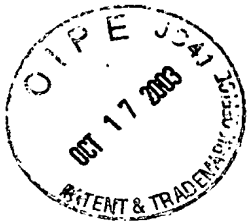
<b>Form PTO-1449 Modified</b>  List of Patent and Publications Cited by Applicant (Use several sheets if necessary)  U.S. Department of Commerce Patent and Trademark Office	Docket No. ISIS-5246	Application No. 10/663,155
	Applicant Phillip Dan Cook, et al.	
	Filing Date September 15, 2003	Group Not Yet Assigned
	Confirmation No. Not Yet Assigned	
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>		
	1	Cotton, M., et al., <i>Nucleic Acids Research</i> , <b>1991</b> , 19, 2629-2635
	2	Ekborg, G., et al., <i>Carbohydrates, Nucleosides, Nucleotides</i> , <b>1980</b> , 7, 57-61
	3	Gladkaya, V.A., et al., <i>Khim. Prir. Soedin</i> , <b>1989</b> , 4, 568
	4	Hansske, F., et al., <i>Tetrahedron</i> , <b>1984</b> , 40, 125-135
	5	Inoue, H., et al., "Synthesis and hybridization studies on two complementary nona(2'-O-methyl)ribonucleotides," <i>Nucleic Acids Research</i> , XP 000570336, <b>1987</b> , 15(15), 6131-6148
	6	Iribarren, A.M., et al., <i>Proc. Natl. Acad. Sci.</i> , <b>1990</b> , 87, 7747-7751
	7	March, J., <i>Advanced Organic Chemistry, Wiley-Interscience</i> , John Wiley & Sons, <b>1985</b> , 220
	8	Robins, M.J., et al., <i>J. Org. Chem.</i> , <b>1974</b> , 39, 1891-1899
	9	Robins, M.J., et al., <i>Can. J. Chem.</i> , <b>1981</b> , 59, 3360-3364
	10	Singer, B. and Kusmieriek, "Alkylation of Ribose in RNA Reacted with Ethylnitrosourea at Neutrality", <i>Biochemistry</i> <b>1976</b> , 15(23), 5052-5057
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<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>				
	11	Sproat, B.S., et al., <i>Nucleic Acids Res.</i> , <b>1990</b> , <i>18</i> , 41-49		
	12	Sproat, B.S., et al., <i>Nucleic Acids Res.</i> , <b>1991</b> , <i>19</i> , 733-738		
	13	Sproat, B.S., et al., "2'-O-methyloligoribo-nucleotides: synthesis and applications," <i>Oligonucleotides and Analogues</i> , Eckstein, F. (Ed.), Oxford University Press, <b>1991</b> , 49-86		
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	15	Yamauchi, K., et al., <i>J. Org. Chem.</i> , <b>1980</b> , <i>45</i> , 3865-3868		
	16	Chavis, C. et al., "Synthesis of 2',3'-Differentiated Ribonucleosides via Lycosylation Reactions with 2'-O-TBDMS Ribofuranose Derivatives. A. Pyrimidine Series", <i>J. Org. Chem.</i> <b>1982</b> , <i>47</i> , 202-206.		
	17	Copy of the European Search Report dated February 3, 2003 (EP 02 07 6058)		
	18	Divakar, K.J. et al., "Reaction Between 2,2'-Anhydro-1- $\beta$ -p-arabinofuranosyluracil and Thiolate Ions", <i>J. Chem. Soc. Perkin Trans.</i> <b>1982</b> , 1625-1628.		
	19	Guinosso, et al., "synthesis and biophysical and biological evaluation of 2'-modified antisense oligonucleotides," <i>Nucleosides &amp; Nucleotides</i> , <b>1991</b> , <i>10</i> (1-3)259-262		
	20	Inou, et al., "Sequence-dependent hydrolysis of RNA using modified oligonucleotide splints and RNase H," <i>FEBS Letts.</i> , <b>1987</b> , <i>215</i> , 327-330		
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	21	Inoue, et al., "Synthesis and properties of novel nucleic acid probes," <i>Nuc. Acids Res.</i> , <b>1985</b> , <i>16</i> , 165-168		
	22	Khursid, et al., <i>FEBS Letts.</i> , <b>1972</b> , <i>28(1)</i> , 25		
	23	Kielanowska, et al., <i>Nucleic Acids Res.</i> , <b>1976</b> , <i>3(3)</i> , 817		
	24	Kikuchi, et al., <i>Chemical Science</i> , <b>1988</b> , <i>43(5)</i> , 623-630; Chemical Abstracts, January 24, <b>1989</b> , <i>110</i> , Abstract No. 24,228		
	25	Kusmieriek, et al., <i>ACTA Biochimica Polonica</i> , <b>1973</b> , <i>20(4)</i> , 365		
	26	Pike, et al., <i>J. Org. Chem.</i> , <b>1974</b> , <i>39(25)</i> , 3674		
	27	Ransford, et al., <i>J. Carbohydrates - nucleosides-nucleotides</i> , <b>1974</b> , <i>1(3)</i> , 275		
	28	Rottman, et al., <i>Biochemistry</i> , <b>1974</b> , <i>13</i> , 2762		
	29	Sproat, et al., "2' -O-alkyloligoribounucleotides: synthesis and applications in studying RNA splicing," <i>Nucleosides &amp; Nucleotides</i> , <b>1991</b> , <i>10</i> , 25-35		
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	31	Wagner, D. et al., "Preparation and Synthetic Utility of Some Organotin Derivatives of Nucleosides", <i>J. Org. Chem.</i> <b>1974</b> , <i>39(1)</i> , 24-30		
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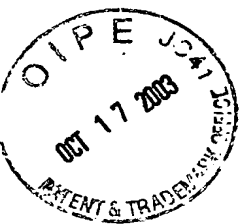
Examiner Initial		Document No.	Date	Name	Class	Subclass
	32	5,013,830	05/1991	Ohtsuka, et al.	536	25.1
	33	4,511,713	04/1985	Miller, et al.		
	34	5,013,830	05/1991	Ohtsuka, et al.		
	35	5,214,135	05/25/93	Srivastava, et al.	536	26.7
	36	5,466,786	11/14/95	Buhr et al.	435	26.26
	37	5,658,731	08/19/97	Sproat et al.	435	6

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Examiner Initial		Document No.	Date	Country	Translation	
					YES	NO
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	39	0 269 574 A2	06/1988	EPO		
	40	0 378 518	07/18/90	EPO		X
	41	0 399 330	05/15/90	EPO		
	42	0 519 463	12/23/92	EPO		
	43	39 15 462	05/11/89	Germany		

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Examiner Initial		Document No.	Date	Name	Class	Subclass

**FOREIGN PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Country	Translation	
					YES	NO
	44	41 10 085 A1	10/01/92	Germany	X abstract	
	45	WO 90/08156	07/26/90	PCT		
	46	WO 91/15499	10/17/91	PCT		
	47	WO 91/06556	05/16/91	PCT		
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